

***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "1024" has been used to designate both decoder-fig.10 and data processor-fig.10. Note that the "**data processor-1024**" in fig.10 should be changed to **====data processor-1040====** as disclosed in the specification, paragraph 0073. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 17, 29 and 32 are rejected under 35 U.S.C. 101 because the claimed invention is direct to an apparatus which is a physical hardware. However, the body of the claims the applicant only recites means (i.e., means for receiving, means for processing, means for determining, means for passing), which are defined as software.

This implies that Applicant is claiming software, *per se*, lacking the hardware necessary to realize any of the underlying functionality. Therefore, the claims invention directed to non-statutory subject matter as computer programs, *per se*, i.e. the descriptions or expressions of the programs, are not physical “things.” Therefore, the claims invention is direct to both statutory such as apparatus and software “process” as stated in the specification paragraph 0078 (US 2005/0117546 A1). ***If applicant wanted to claim a software, the software must store on a memory or computer-readable medium being executable by a processor.***

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9, 13-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ota (6,115,615).

Regarding claims 1, 17-18,

Ota discloses a method, for use in a wireless communication device (mobile station 28-fig.3), of supporting communication with a plurality of communication

networks (macro and micro networks, fig.1, col.5, lines 29-36) of different link-layer technologies (fig.3), comprising:

receiving a first Internet Protocol (IP) packet at a logical interface (Transport Switcher-fig.3) (mobile station 28-fig.3 inherently receiving IP packets at Transport Switcher as logical interface, see also fig.3);

processing the first IP packet in accordance with a configuration for the logical interface (mobile station 28-fig.3 processing the IP packets in accordance with the logical interfaces configurations, i.e., PPP route address or IP (Mobile IP) in fig.3);

determining a first physical interface (i.e., physical interface 26-fig.3) as being associated with the logical interface (Transport Switcher-fig.3), wherein the first physical interface is one of a plurality of physical interfaces (physical interfaces, i.e., radio wave or infrared light in fig.3) for the plurality of communication networks (macro or micro networks), and wherein the logical interface (Transport Switcher-fig.3, col.6, lines 40-42) is configurable for association with any one (i.e., radio wave in fig.3) of the plurality of physical interfaces; and

passing the processed first IP packet to the first physical interface (fig.3 wherein mobile IP transmitted/received IP packets via one of the physical interfaces, i.e., radio wave or infrared light), the first physical interface performing processing for a wireless technology (i.e., radio wave) supported by a wireless communication device (mobile station 28-fig.3); and

passing the first IP packet processed by the first physical interface to a link layer module (i.e., virtual circuit switching-fig.3), the link layer module implementing all link layer protocol (i.e., data link layer) for the wireless technology.

See also column 9, lines 1-5 wherein the functions 45 is realized by software processing; and column 7, lines 7-8 wherein transport layer carried out software processing for switching two networks (claim 18).

Regarding claim 2, Ota further discloses wherein the plurality of communication networks are wireless communication networks of different wireless technologies (macro and micro networks, fig.1, col.5, lines 29-36).

Regarding claim 3, Ota further discloses wherein the first physical interface (i.e., radio wave 21-fig.3) is for a first communication network (i.e., macro network 10-fig.1) among the plurality of communication networks (macro and micro networks), and wherein the logical interface (Transport Switcher-fig.3) is associated with the first physical interface (radio wave 21-fig.3) for communication with the first communication network (macro network).

Regarding claim 4, Ota further discloses wherein the logical interface (Transport Switcher-fig.3) is associated with an IP address (Mobile station address, fig.3-emphasis

added) that remains unchanged regardless of which one of the plurality of physical interfaces is associated with the logical interface (see also fig.8 & col.9, lines 6-30).

Regarding claim 5, Ota further discloses wherein the first IP packet includes the IP address of the logical interface (Transport Switcher-fig.3) as a source address (Source Address inherently at IP address that used for routing IP packets to either Macro or Micro Network-emphasis added, see also col.6, lines 43-47).

Regarding claim 6, Ota further discloses wherein the processing includes encapsulating the first IP packet with the IP address of the logical interface (see fig.4-wherein the IP address was encapsulated with new IP header having the destination address, emphasis added).

Regarding claim 7, Ota further discloses wherein the configuration for the logical interface (Transport Switcher-fig.3, col.6, lines 40-42) is dependent on a particular one of the plurality of physical interfaces (radio wave to macro network or infrared light to micro network, emphasis added, see fig.3) associated with the logical interface.

Regarding claim 8, Ota further discloses receiving a second IP packet (IP packets, i.e., second IP packet) at the logical interface (Transport Switcher-fig.3); processing the second IP packet in accordance with the configuration for the logical interface; determining a second physical interface (i.e., infrared light-fig.3) as being associated with the logical interface, wherein the second physical interface is another one of the plurality of physical interfaces (radio wave or infrared light, fig.3); and passing the processed second IP packet to the second physical interface (passing the second IP packet to micro network via infrared light interface -figs.2-3, emphasis added, col.6, lines 37-47).

Regarding claim 9, Ota further discloses wherein the second physical interface (i.e., infrared light, fig.3) is for a second communication network (micro network-fig.1) among the plurality of communication networks (macro and micro networks-fig.1), and wherein the logical interface (transport switcher-fig.3) is associated with the second physical interface (infrared light interface-fig.3) for communication with the second communication network (micro network-fig.1), see col.6, lines 37-47.

Regarding claims 13 & 28,

Ota discloses an apparatus operable to support communication with a plurality of communication networks (i.e., macro and micro networks) of different link-layer technologies (i.e., radio wave and infrared light), comprising:

a first physical interface (radio wave interface-fig.3) operative to perform technology-dependent processing for a first communication network (macro network 10-fig.1) among the plurality of communication networks (macro and micro networks, fig.1);

a second physical interface (infrared light interface-fig.3) operative to perform technology-dependent processing for a second communication network (micro network-fig.1) among the plurality of communication networks (macro and micro networks, fig.1);

the first link layer module (virtual circuit switching link layer-fig.3) operably coupled to the first physical interface (radio wave interface-fig.3), for implementing all link layer protocols of the first communication network (macro network);

a second link layer module (CSMA contention link layer-fig.3) operably coupled to the second physical interface (infrared light interface-fig.3), for implementing all link layer protocols of the second communication network (micro network); and

a logical interface (transport switcher, fig.3) operative to receive and process a first Internet Protocol (IP) packet (IP packets) in accordance with a configuration for the logical interface (col.6, lines 37-47), determine that the first physical interface (radio wave interface-fig.3) is associated with the logical interface (transport switcher-fig.3), and pass the processed first IP packet to the first physical interface (radio wave interface-fig.3), wherein the logical interface (transport switcher-fig.3) is configurable for association with either the first or second physical interface (radio wave or infrared light interfaces, fig.3, see col.6, lines 37-47).

Regarding claim 14, Ota further discloses wherein the logical interface (transport switcher-fig.3) is further operative to receive and process a second IP packet (IP packets) in accordance with the configuration for the logical interface (transport switcher-fig.3), determine that the second physical interface (infrared light interface-fig.3) is associated with the logical interface (transport switcher-fig.3), and pass the processed second IP packet to the second physical interface (infrared light interface, see col.6, lines 37-47).

Regarding claim 15, Ota further discloses wherein the logical interface (transport switcher-fig.3) is associated with an IP address (Mobile station address, fig.3-emphasis added) that remains unchanged regardless of whether the first or second physical interface is associated with the logical interface (transport switcher) (see also fig.8 & col.9, lines 6-30), and wherein the first IP packet includes the IP address of the logical interface as a source address (Source Address inherently at IP address that used for routing IP packets to either Macro or Micro Network-emphasis added, see also col.6, lines 43-47).

Regarding claim 16, Ota further discloses a Mobile IP module (mobile node-fig.1) operative to configure the logical interface (transport switcher-fig.3) and associate the logical interface with either the first or second physical interface (radio wave or infrared light interfaces-fig.3, see col.6, lines 37-47).

Regarding claims 19 & 29,

Ota discloses a method of supporting communication with a plurality of communication networks of different link-layer technologies, comprising:

receiving an Internet Protocol (IP) packet at a physical interface (radio wave interface-fig.3), wherein the physical interface is one of a plurality of physical interfaces (radio wave and infrared interfaces, fig.3) for the plurality of communication networks (macro and micro networks, fig.1);

processing the IP packet in accordance with a configuration for the physical interface (processing and redirecting IP packets for the physical interface, i.e., radio wave or infrared light, fig.3);

determining a plurality of logical interfaces (TCP Network Layer having PPP Route Address and IP (Mobile IP), fig.3) associated with the physical interface (radio wave or infrared light, fig.3), wherein each (PPP Route Address or IP (Mobile IP)-fig.3) of the plurality of logical interfaces is associated with a respective IP address (IP address, col.7, lines 2-13, see also fig.8 & col.9, lines 6-30) and is configurable for association with any one of the plurality of physical interfaces (radio wave or infrared light interfaces, fig.3);

querying (querying is inherent in the determining process-emphasis added) the plurality of logical interfaces (radio wave and infrared light, see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30); and

passing the processed IP packet to a selected logical interface (i.e., radio wave or infrared light interface (see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30) among the plurality of logical interfaces (PPP Route Address and IP (Mobile IP)) if a response to the query (IP address) is received.

Regarding claim 20, Ota further discloses passing the processed IP packet to an IP layer (IP Layer, fig.8) if the response to the query is not received (see fig.8 & col.9, lines 6-30).

Regarding claim 21, Ota further discloses wherein the IP address for each of the plurality of logical interfaces (fig.8 & col.9, lines 6-30) remains unchanged regardless of which one of the plurality of physical interfaces is associated with the logical interface.

Regarding claim 22, Ota further discloses determining one or more candidate logical interfaces (PPP Route Address and IP (Mobile IP), fig.3), from among the plurality of logical interfaces, for potentially processing the IP packet, and wherein the one or more candidate logical interfaces are queried (see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30).

Regarding claims 23-24, Ota further discloses wherein the plurality of candidate logical interfaces are determined based on an IP address of the IP packet and the IP address of each of the logical interfaces queried (see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30).

Regarding claim 25, Ota further discloses receiving a response to the query from one of the plurality of logical interfaces, and wherein the selected logical interface is the one logical interface with the response queried (see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30, wherein mobile node determined to redirect IP packets to the corresponding logical interface that associating with the corresponding physical interface, *emphasis added*).

Regarding claim 26, Ota further discloses receiving responses to the query from at least two logical interfaces (i.e., PPP or IP, fig.3) among the plurality of logical interfaces; and selecting one logical interface (i.e., PPP interface) among the at least two logical interfaces as the selected logical interface queried (see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30).

Regarding claim 27, Ota further discloses wherein the one logical interface (i.e., PPP Route Address) is selected based on the IP address of the one logical interface queried (see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30).

Regarding claims 30 & 32,

Ota discloses a method, for use in a mobile communication device, of supporting communication with a plurality of communication networks (macro and micro networks, fig.1) of different link-layer technologies (radio wave and infrared light, fig.3), comprising:

identifying a physical interface currently active (i.e., the radio wave interface associated with the IP address as active physical interface-emphasis added, col.9, lines 19-27) and used for communication with a communication network (macro network) among the plurality of communication networks (macro and micro of networks), wherein the physical interface (radio wave interface) is one of a plurality of physical interfaces (radio wave and infrared interfaces) for the plurality of communication networks (macro and micro networks);

determining capabilities of the physical interface (determining that the radio wave interface is capable of transporting the IP packet having the IP address of the topologically current network location, col.9, lines 19-27-emphasis added);

configuring a logical interface (PPP interface, see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30) among a plurality of logical interfaces within the mobile device to perform processing for Internet Protocol (IP) packets based on the determined capabilities of the physical interface (i.e., selecting radio wave interface -emphasis added); and

associating the configured logical interface (PPP interface-fig.3) with the physical interface (radio wave interface, see col.7, lines 2-13 & fig.3, and also fig.8 & col.9, lines 6-30).

Regarding claim 31, Ota further discloses wherein the capabilities of the physical interface is dependent on the communication network for which the physical interface is used for communication (determining that the radio wave interface is capable of transporting the IP packet having the IP address of the topologically current network location, col.9, lines 19-27-emphasis added).

6. Claims 10-12 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Ota (6,115,615) as applied to claim 1 above, and further in view of Pichna (6,904,055).

Regarding claims 10-12, Ota does not explicitly disclose wherein the plurality of communication networks include a cdma2000 wireless communication network (claim

10); wherein the plurality of communication networks include a W-CDMA wireless communication network (claim 11); wherein the plurality of communication networks include an IEEE 802.11-based wireless network (claim 12).

However, in the same field of endeavor, Pichna discloses cellular network in CDMA2000, WCDMA, WLAN technologies, and non-cellular network of short range in IEEE 802.11 (col.2, lines 14-29). Therefore, it would have been obvious to implement Pichna's teaching of cellular communication networks to Ota's wireless networks to accommodate for different standards of more wireless communication protocols. This is a common practice in the art.

***Response to Arguments***

7. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUONGCHAU BA NGUYEN whose telephone number is (571)272-3148. The examiner can normally be reached on Monday-Friday from 8:15 a.m. to 4:45 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/726,456  
Art Unit: 2464

Page 17

/PHUONGCHAU BA NGUYEN/  
Examiner, Art Unit 2464

/Ricky Ngo/  
Supervisory Patent Examiner, Art  
Unit 2464